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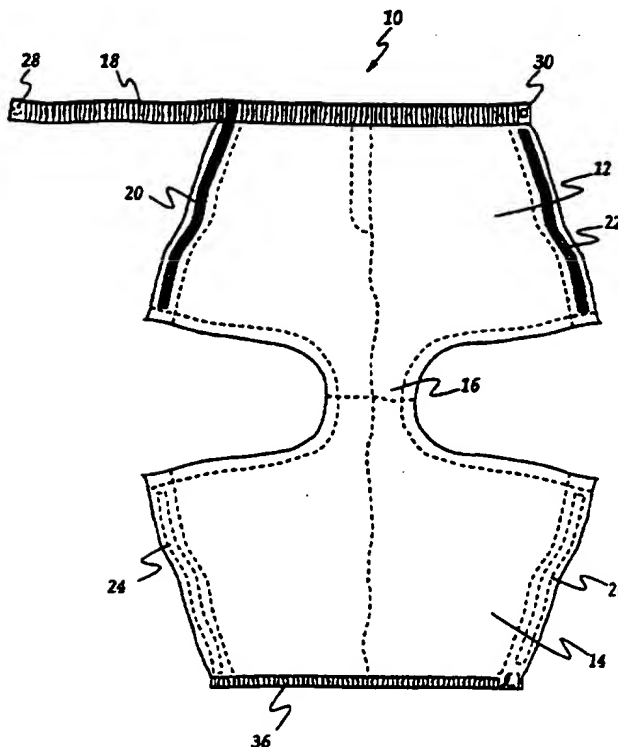
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(54) Title: GARMENT AND FASTENING SEAM ASSEMBLY

(57) Abstract

A garment (10) is functional in a wearing mode and a changing mode, and includes interconnected front and rear garment portions (12 and 14) for covering front and rear body portions of a wearer, the front and rear garment portions having lateral edge portions; a belt (18) supportable by the body of a wearer for locating the front garment portions in position on the body, and fastening means (20, 22, 24 and 26) for releasably fastening together corresponding lateral edge portions of the front and rear garment portions; the garment being in the wearing mode when corresponding lateral edge portions of the front and the rear garment portions are fastened by the fastening means, and in the changing mode when corresponding lateral edge portions of the front and the rear garment portions are not fastened by the fastening means.



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## GARMENT AND FASTENING SEAM ASSEMBLY

**Technical Field**

This invention relates to a garment and a fastening  
5 seam assembly therefor.

This invention has particular but not exclusive  
application to garments suitable for incapacitated  
persons who have difficulty dressing themselves,  
particularly those who have difficulty in pulling  
10 clothing over their arms, head, feet and legs. Such  
persons include paraplegics, aged persons, stroke victims  
and acute care orthopaedic patients or others temporarily  
incapacitated by, for example, broken legs or damaged  
ankles, knees, hips or backs.

15 The garments may be of any type and style for both  
males and/or females and include garments for the upper  
body such as vests, singlets, shirts, skirts, dresses,  
smocks, nightshirts, coats, jackets, pullovers and the  
like (referred to herein as upper body garments), and  
20 garments for the lower body such as a pair of pants,  
boxer shorts, shorts, trousers, panties and briefs, other  
underwear and the like (referred to herein as lower body  
garments).

**25 Background of the Invention**

Garments which facilitate the toileting and dressing  
of infants, frail aged and elderly, and patients and  
people with disabilities, or which facilitate surgical  
and post-operative and post-trauma procedures are known.

30

**Summary of the Invention**

The present invention aims to provide an alternative  
to known garments for the above and like purposes.

In one aspect this invention resides broadly in a  
35 fastening seam assembly for releasably fastening together  
portions of a garment, the fastening seam assembly  
including:-

a first assembly member for fixing to one portion of

the garment and comprising a first fastening member, and  
a second assembly member for fixing to another  
portion of the garment and comprising a second support  
member, a second fastening member complementarily  
engageable by the first fastening member and fixed to the  
second support member, and a shielding member covering  
the second fastening member.

The fastening mechanism may be of any suitable type  
such as buttons, zippers, press studs, magnetic strips  
and hooks and eyes. However it is preferred that the  
fastening mechanism utilises the hook and loop principle  
and that the first and second fastening members comprise  
the loops and hooks respectively of a hook and loop  
fastener such as those known by the Trade Mark VELCRO.

The shielding member can cooperate with the second  
support member in any suitable way to cover the second  
fastening member but it is preferred that the shielding  
member and the second support member define a cleft for  
receiving the first assembly member therein for  
engagement of the first and second fastening members.

In a preferred embodiment the shielding member  
includes padding. The second assembly member can be made  
from a number of pieces which are stitched together but  
for ease of manufacture it is preferred that the  
shielding member and the second support member are formed  
from one piece of material.

In another aspect this invention resides broadly in  
a garment functional in a wearing mode and a changing  
mode, the garment including:-

interconnected front and rear garment portions for  
covering front and rear body portions of a wearer, the  
front and the rear garment portions having lateral edge  
portions;

locating means supportable by the body of a wearer  
for locating a portion of the garment in position on the  
body, and

fastening means for releasably fastening together  
corresponding lateral edge portions of the front and the

rear garment portions;

the garment being in the wearing mode when corresponding lateral edge portions of the front and the rear garment portions are fastened by the fastening means, and in the changing mode when corresponding lateral edge portions of the front and the rear garment portions are not fastened by the fastening means.

The garment may be a lower body garment wherein the lateral edge portions are substantially transverse to the upper portions of the front and rear body portions which in use are located about the waist of a wearer, the fastening means are hook and loop fastening strips located along the lateral edge portions, and the locating means is connectable to opposed lateral edge portions of one of the front and rear garment portions and with the upper portion of the other of the front and rear garment portions constitutes a girdle.

The fastening means of the lower body garment may be of any suitable type but it is preferred that the fastening means is a fastening seam assembly as defined above, the first and second assembly members of the fastening seam assembly being fixed to the rear and front garment portions respectively.

The front and rear garment portions of the lower body garment may be interconnected by a web portion which, in use, is disposed between the wearer's legs. In this embodiment the locating means is preferably a belt which in use passes about the waist of the wearer. The front and rear garment portions may have left and right lateral edge portions and the belt may extend between the left and right lateral edge portions of one of the front and rear garment portions. The belt may be permanently fixed to edge portions or may be selectively fastenable to at least one of the left and right lateral edge portions of the front or rear garment portion. Most preferably, the belt is attached to the front garment portion such that, in use, the belt passes around the back of the wearer.

In a further aspect this invention resides broadly in a lower body garment including:-

front and rear garment portions interconnected by a web portion which, in use, is disposed between the  
5 wearer's legs, the front and rear garment portions extending to form leggings and having left and right lateral edge portions;

a fastening seam assembly in at least one of the leggings, the fastening seam assembly having a first  
10 assembly member fixed to a lateral edge portion of the rear garment portion and fastening means in the form of the loops of a hook and loop fastener, and a second assembly member having a support member fixed to a corresponding lateral edge portion of the front garment  
15 portion, fastening means in the form of the hooks of a hook and loop fastener and a shielding member covering the hooks, the shielding member and the support member defining a cleft for receiving the first assembly member therein for engagement of the hooks and loops, and  
20 locating means in the form of a belt releasably fastened to and extending between the left and right lateral edge portions of one of the front and rear garment portions and with the upper portion of the other of the front and rear garment portions constituting a  
25 girdle.

In another preferred embodiment of the invention the garment is an upper body garment having sleeves and the front and rear garment portions are the front and rear sleeve portions of at least one sleeve, the sleeve  
30 portions being interconnected in the underarm location and having upper lateral edge portions. In this embodiment the locating means is preferably a belt which in use passing about the neck of the wearer. The upper body garment may have a frontpiece and a backpiece, one  
35 of the frontpiece and backpiece being openable, wherein the belt extends between opposed upper portions of the sleeves and with the upper portion of the other of the frontpiece and backpiece constitutes a collar. The belt

may be fixed to the upper portions of opposed sleeves or may be selectively fastenable to at least one of the upper lateral edge portions.

The fastening means of the upper body garment may be a fastening seam assembly as defined above but it is preferred that the fastening means is a fastening seam assembly having a first assembly member fixed to the upper lateral edge portion of the rear sleeve portion, the first assembly member comprising a first fastening member; and a second assembly member fixed to the upper lateral edge portion of the front sleeve portion, the second assembly member comprising a second support member and a second fastening member complementarily engageable by the first fastening member and fixed to the second support member.

The first fastening member may be fixed directly to the one portion of the garment but it is preferred that the first assembly member further comprises a first support member, the first fastening member being fixed thereto.

In another aspect this invention resides broadly in an upper body garment including:-

a frontpiece and a backpiece, one of the frontpiece and backpiece being openable;

a pair of sleeves, at least one sleeve having front and rear sleeve portions interconnected in the underarm location and having upper lateral edge portions;

a fastening seam assembly in the one sleeve, the fastening seam assembly having a first assembly member fixed to the upper edge portion of the rear sleeve portion and fastening means in the form of the hooks of a hook and loop fastener, and a second assembly member having a support member fixed to the upper edge portion of the front sleeve portion and fastening means in the form of the loops of a hook and loop fastener, and

locating means in the form of a belt releasably fastened to and extending between upper portions of the sleeves and with the upper portion of the backpiece

constituting a collar.

In yet another aspect this invention resides broadly in a method of donning a garment, the method including:-  
providing a garment as defined above;

5 supporting the locating means as a girdle or collar on the body of the wearer, and

releasably fastening together the corresponding lateral edge portions of the front and the rear garment portions.

10 In a further aspect this invention resides broadly in a one piece garment including:-

front and rear trunk portions for covering portions of a wearer's trunk and front and rear limb portions for covering portions of a wearer's limbs, the garment being  
15 releasably fastenable along a lateral limb region and the front and rear limb portions being joined along a medial limb region, and

fastening means for releasably fastening together the front and rear limb portions.

20 In one embodiment the garment is a lower body garment and the front and rear limb portions are releasably fastenable to form a legging. In this embodiment the front and rear trunk portions are releasably fastenable along a lateral trunk region.

25 Alternatively, in another embodiment the garment is an upper body garment and the front and rear trunk portions are joined along a lateral trunk region. The front trunk portion of the upper body garment may be releasably fastenable to form left and right front trunk  
30 portions.

The upper body garment may be a jacket, nightshirt or the like, the front and rear limb portions being releasably fastenable to form a sleeve. Alternatively, the upper body the upper body garment may be a singlet,  
35 vest or the like, the front and rear limb portions being releasably fastenable to form a shoulder strap.



**Description of the Drawings**

In order that this invention may be more easily understood and put into practical effect, reference will now be made to the accompanying drawings which illustrate a preferred embodiment of the invention, wherein:

FIG 1 is a plan view of a pair of shorts in accordance the invention shown laid out flat;

FIGS 2A to 2D illustrate the procedure for a person putting on the shorts of FIG 1;

FIG 3 is a plan view of another pair of shorts shown laid out flat and having a fastening seam assembly in accordance with the invention;

FIG 4 is a sectional view illustrating the construction of the fastening seam assembly of FIG 3;

FIGS 5A to 5D illustrate the process for constructing the fastening seam assembly of FIG 4;

FIG 6 is a perspective view of a length of fastening seam assembly in accordance with the invention;

FIG 7 illustrates the connection of the girdle/belt to the pair of shorts of FIG 3;

FIG 8 illustrates the belt;

FIGS 9A and 9B are plan views of the front and back respectively of a top/jacket in accordance with the invention and having a single sleeve opening;

FIGS 10 and 11 show details of the lower portion of the sleeve opening of the jacket of FIGS 9A and 9B;

FIGS 12A and 12B are plan views of the front and back respectively of a shirt/nightshirt in accordance the invention and having both sleeves opening;

FIG 14 illustrates the connection of the collar/belt to the shirt/nightshirt of FIGS 12A and 12B, and

FIGS 15A and 15B are plan views of the front and back respectively of a singlet/vest in accordance the invention.

**Description of Preferred Embodiments of the Invention**

Referring to FIG 1, there is illustrated a pair of shorts 10 comprising front portion 12 and rear portion 14

interconnected by a web portion 16 which, in use, is disposed between the wearer's legs.

The shorts are illustrated laid out flat and outer side up ie with the material which forms the outer surface of the garment when being worn shown uppermost. Throughout the specification references to left and right portions of a garment indicate that the portion is positioned on the left or right side of a person when the garment is worn. Similarly, references to upper and lower portions of a garment indicate that the portion is positioned higher or lower on a person when the garment is worn, references to front and rear portions indicate that the portion is positioned to the front or rear of a person when worn and references to lateral and medial portions indicate that the portion is positioned laterally or medially on a person when worn.

The shorts have locating means 18, in the form of an elasticised belt, for locating the front portion 12 in position whilst the rear portion 14 is positioned. Of course, the locating means may be operable to locate the rear portion whilst the front portion is positioned. Whilst the locating means takes the form of an elasticised belt in the preferred embodiment, the locating means may take other forms.

Front portion 12 has left and right lateral edges 22 and 20 respectively. Similarly, rear portion has left and right lateral edges 26 and 24 respectively.

The shorts also have fastening means disposed adjacent the respective left and right lateral edges for fastening the front and rear portions together. In the preferred embodiment, the fastening means takes the form of hook and loop fastener strips.

The belt, in use, extends between the left and right lateral edges 22 and 20 of the front portion 12 to thereby pass around the back of the wearer and encircle the waist of the wearer. The belt extends from left lateral edge 22 and is selectively fastenable to the right lateral edge 20 by means of a press stud 28, 30.

Of course, other known fasteners such as hook and loop fastener tabs, buttons or hooks and eyes may be used.

Edge portion 36 of rear portion 14 is elasticised so that the entire waist of the shorts is elasticised.

5 In use, the belt 18 is passed about the back of the wearer as illustrated in FIG 2A. In this position the front portion 12 is located such that rear portion 14 can be passed between the wearer's legs and subsequently fixed in place by engagement of the hook and loop  
10 fastener strips extending the length of the lateral edges of the front and rear portions. This operation is illustrated in FIGS 2B and 2C, with the final assembled product, ie the shorts in the wearing mode, illustrated in FIG 2D.

15 Alternatively, in a manner not illustrated, the hook and loop fastener strip on right lateral edge 20 may not extend all the way to the top of the front portion 12 in the same manner as the hook and loop fastener on left lateral edge 22. Rather, a small piece of hook and loop  
20 fastener may be located on the elasticised belt on the opposite side to press stud component 28. This small piece of hook and loop fastener is engageable by a complementary piece of hook and loop fastener located on the end of edge portion 36.

25 As can be seen in FIGS 3-8, the shorts can include a fastening seam assembly and the belt can be releasably attached to the shorts. It should be noted that whilst shorts are illustrated in these diagrams, the construction outlined is equally applicable to trousers  
30 and slacks.

In FIG 3, shorts 29 are illustrated laid out flat and outer side up with front garment portion 101 connected to rear garment portion 102 by a web portion 17 as described with reference to FIG 1. Shorts 29 have  
35 locating means in the form of an elasticised belt 32 releasably attached via fabric loops 34 to the upper elasticised band 33 of front portion 101 at the opposed lateral edges.

The upper portion of rear garment portion 102 forms an elasticised band 23 having loop fastening tabs 25 and 27 of hook and loop fasteners positioned at the ends of band 23 with the longitudinal axis of the tabs aligned along band 23. Tabs 25 are located on the inner side of band 23 and tabs 27 are located on the outer side. Loop strips 42 of a hook and loop fastener strip are located along the lateral edges of rear garment portion 102. Loop strips 42 are positioned on webbing support 39 (not seen in FIG 3).

Similarly the upper portion of front garment portion 101 forms an elasticised band 33 having hook fastening tabs 21 and 43 of hook and loop fasteners positioned at the ends of band 33 with the longitudinal axis of the tabs aligned along band 33. Fastening seam assemblies 38 having hook strips 41 of a hook and loop fastener strip are located along the lateral edges of front garment portion 101. Tabs 43 are located facing outwardly on fastening seam assembly 38 and tabs 21 are located facing inwardly on fastening seam assembly 38.

As is best seen in FIG 4, fastening seam assembly 38 has two support members 39 and 46 attachable respectively to rear garment portion 102 and front garment portion 101. The loop strip portion 42 of a hook and loop fastener is fixed to support member 39. Support member 46 is a continuous length of material folded on itself about a cord insert 40 to form an arm 49 on the underside of which is fixed the hook strip portion 41 of the hook and loop fastener. Support member 46 is again folded to form a flap-like arm 48 which serves as a cover for hook portion 41. Foam insert 44 is positioned within cover arm 48. Four layers of the material of support member 46 are stitched together at location 47 such that arms 48 and 49 define a cleft 45 with cover arm 48 being biased by the stitching to cover hooks 41 on the underside of arm 49.

Support member 46 is attached to the lateral edges of front garment portion 101 such that in use cleft 45

faces rearwardly, hook strips 41 face inwardly ie towards the wearer, and consequently cover arm 48 is disposed between hook strips 41 and the skin of a wearer. Support member 39 is attached to the lateral edges of rear garment portion 102 such that in use loop strips 42 face outwardly.

As can be seen in FIGS 5A to 5D, during the construction of the fastening seam assembly, support 46 is made from fabric 107 illustrated outer side up in FIG 5A. Portions 103, 104, 105 and 106 are folded about fold lines 108, 109, and 110 with foam padding 44, cording 40, hook strip 41 and hook tabs 21 and 43 positioned as illustrated with the longitudinal axis of the tabs transverse to that of strip 41. The assembly is then sewn along line 47 and portions 111 and 112 are folded over and sewn down to form waistband 33. A strip of the fastening seam assembly is seen in FIG 6.

As can be seen in FIG 7 which is a detailed illustration of the connection of belt 32 to waistband 33, a loop of fabric 34 is fixed to the upper end of cover arm 48 when portion 111 is folded over and stitched down. Belt 32, illustrated in FIG 8 with fabric 113 outer side up, is an elasticised band with a pair of loop and hook fastening tabs 51 and 52 respectively positioned at either end longitudinally along belt 32 for increased strength of fastening.

Belt 32 is connected to the shorts by drawing the end of the belt through fabric loop 34 and looping it back on itself so that hook and loop fastening tabs 51 and 52 engage.

The lower body garment illustrated in FIGS 1 to 8 is a one piece garment having an opening for the legs in the form of leggings and a frontpiece and rearpiece for the lower trunk. The garment is releasably fastenable along the leggings in a lateral leg region, along the sides of the frontpiece and rearpiece and optionally down the frontpiece to form a fly (in a manner not shown). The front legging portions are joined to the rear legging

portions along the inward facing leg regions ie in a medial leg region.

In use, the shorts illustrated in FIGS 3 to 8 are donned by a wearer in a manner generally similar to that illustrated in FIGS 2A to 2D. Belt 32, if not attached to the garment is connected to one of fabric loops 34. Belt 32 is then passed about the back of the wearer as illustrated in FIG 2A with the other end of belt 32 being connected to the other loop 34.

It will be appreciated that in this position the front portion is in position on the wearer. If the wearer is a bedfast patient being bathed or toileted, when the patient is rolled on to the side, cover arm 48 will shield the skin of the patient from hooks 41. Furthermore, cover arm 48 is padded and so prevents discomfort when a wearer is sleeping on the side.

(It should be noted that in a manner not illustrated, the fastening seam can also be constructed so that the member attached to the front garment portion has the cover arm positioned above the other arm carrying the hooks which will face upwardly, and with the loops on the rear garment portion facing downwardly).

With the garment positioned as seen in FIG 2A, the front portion 101 is located such that rear portion 102 can be passed between the wearer's legs. Rear band 23 is raised to the level of belt 32 which as described above is located about the wearer's waist. One side of band 23 is positioned at the wearer's waist above the corresponding side of band 33, and with arm 49 which carries the hook fasteners raised above cover arm 48, loop tab 25 on band 23 is engaged with hook tab 43 on band 33. A similar procedure is carried out at the other end of band 23. The rear garment portion 102 is now fixed in position on the wearer.

The seam along one lateral portion is completed by positioning the lateral edge of rear portion 102 along cover arm 48. In this configuration the loop strip 42 on the rear portion lateral edge will be facing outward.

Arm 49 with hook strip 41 underneath is then folded onto the lateral edge of the rear portion to fasten the hook and loops together to effect the seam. Hook tab 21 on band 33 is then engaged with loop tab 27 on band 23 to  
5 fully join bands 23 and 33 across the full width of the band. A similar procedure is then carried out on the other lateral portion.

It will be appreciated that the shorts and trousers described above avoid the difficulty of having to be  
10 pulled up and down over the feet and legs and that the wearer is protected from contact with the relatively hard hooks of a hook and loop fastener which can injure sensitive skin. In the wearing mode, the seam arrangement when completed is not bulky and the fastener  
15 itself is disguised. The garment therefore appears fashionable and is not readily identifiable as a product for the disabled.

As can be seen in FIGS 9 to 15, upper body garments can be made in accordance with the invention.

20 FIGS 9A and 9B illustrate a long sleeve jacket 60 shown with outer side up. Jacket 60 has a front opening at 62 to form frontpiece halves 63 and 64, backpiece 65 and right and left sleeves 66 and 67 respectively. Jacket 60 is openable along one sleeve 67 by means of a  
25 fastening seam assembly 61.

As can be seen in FIG 10 which shows the lower portion of a right sleeve, seam assembly member 68 which carries a downward facing loop strip is connected to the front sleeve portion 121 and seam assembly member 69  
30 which carries an upward facing hook strip is connected to the rear sleeve portion 122. Hook and loop tabs 70 and 71 connect the cuff of the sleeve.

FIG 11 illustrates a seam assembly in left sleeve 67 having front sleeve portion 125 and rear sleeve portion  
35 126. Additional foam padding 72 is positioned in the neck and shoulder region. Seam assembly member 74 which carries a downward facing loop strip is connected to the front sleeve portion 125 and seam assembly member 73

which carries an upward facing hook strip is connected to the rear sleeve portion 126. Hook and loop tabs 75 and 76 connect at the collar above the shoulder of the sleeve.

5        FIGS 12A and 12B illustrate a short sleeve nightshirt 80 shown with outer side up. FIGS 13A and 13B illustrate nightshirt 80 shown inner side up. Nightshirt 80 has a front opening at 82 to form frontpiece halves 83 and 84, backpiece 85 and right and left sleeves 86 and 87  
10        respectively. Nightshirt 80 is openable along both sleeves 86 and 87 by means of fastening seam assemblies 81.

As can be seen in FIGS 13B and 14, an elasticised belt 91 similar to belt 32 described above with reference  
15        to the shorts, is attached to backpiece 85 which carries loops 94 at the upper neck portion thereof by means of loop and hook fastening tabs 95 and 96 located at the ends of belt 91. Belt 91 can thus cooperate with the neck portion 97 of backpiece 85 to form a collar for  
20        supporting the backpiece in place on the back of a wearer. Front opening 82 is closed using a foam padded closure 88 having hook and loop fastening tabs 89. Additional foam padding 92 is positioned in the neck and shoulder region.

25        The upper body garment illustrated in FIGS 9 to 14 is a one piece garment having an opening for the arms in the form of sleeves and a frontpiece and rearpiece for the upper trunk. The garment is releasably fastenable along the top of the sleeve or sleeves ie in a lateral  
30        arm region, and down the frontpiece or optionally the backpiece. The front sleeve portions are joined to the rear sleeve portions in the inward facing arm regions ie in a medial arm region, and the frontpieces are joined to the backpiece at the sides ie in a lateral trunk region.

35        In use, the nightshirt illustrated in FIGS 12 to 14 is donned by a wearer as follows. Belt 91, if not attached to the garment is connected to one of fabric loops 94. Belt 91 is then passed about the neck of the



wearer with the other end of belt 91 being connected to the other loop 94. Alternatively, when a person with one arm disabled is self-dressing, the procedure is assisted if belt 91 is first connected to both loops 94 and the collar thus formed is passed over the neck with the one good arm. The elasticised nature of belt 91 facilitates this procedure.

It will be appreciated that in this position the rear portion is in position on the wearer's back and that the lateral edge portions of the backpiece and rear sleeve portion will have hook strips facing outwards of the wearer's body. The upper portion of the frontpiece is raised to the level of belt 91 which as described above is located about the wearer's neck. The loop strip on the upper lateral edge portions of the frontpiece is then positioned above the hook strip on the lateral edge portions of the backpiece commencing at the collar. A similar procedure is carried out with the other frontpiece if necessary. The frontpieces are now fixed in position on the wearer.

The seam along the sleeve is completed by positioning the loop strip on the upper lateral edge portion of the front sleeve portion above the hook strip on the lateral edge portion of the rear sleeve portion. collar. A similar procedure is carried out with the other sleeve if necessary. The front opening 82 is then closed although if desired opening 82 can be closed before the sleeve portions are fastened. The frontpieces and front sleeve portion(s) are now fixed in position on the wearer and donning the garment is completed.

It will be appreciated that in both upper and lower garment embodiments the hooks of the hook and loop fasteners are preferably located on that portion of the garment which is first positioned on the wearer and the loops are located on that portion of the garment which is moved across the body of the wearer to engage with the portion already positioned. This avoids the relatively hard hooks possibly abrading the skin.

Alternatively, if the fastening seam assembly illustrated in FIGS 3 to 6 is used in the upper body garment of FIGS 9 to 14 with the hook member connected to the front garment portions, abrasion is substantially  
5 prevented because the cover arm protects the skin from the hooks as they are positioned.

FIGS 15A and 15B illustrate a nest or singlet in accordance with the invention shown with outer side up. Singlet 140 has a front opening at 141 to form frontpiece  
10 halves 134 and 135, backpiece 136, right and left front shoulder straps 132 and 133 respectively and right and left rear shoulder straps 142 and 143 respectively. Singlet 140 is openable along both shoulder straps. Hook fastening tabs 137, 138, 146 and 147 on the shoulder  
15 straps of backpiece 136 fasten with corresponding loop fastening tabs 130, 131, 144 and 145 on both frontpiece shoulder straps. Foam padding layer 139 is located underneath the backpiece shoulder straps.

The singlet illustrated in FIGS 15A and 15B is a one  
20 piece garment having an opening for the arms in the form of shoulder straps and a frontpiece and rearpiece for the upper trunk. The garment is releasably fastenable along the top of the shoulder straps and down the frontpiece or optionally the backpiece. The frontpieces are joined to  
25 the backpiece at the sides.

In use the shoulder straps of the backpiece of the singlet effectively constitute a belt which, with the frontpiece shoulder straps constitutes a collar for locating the backpiece on the wearer, the front piece  
30 subsequently being positioned by closing the opening of the front piece. Alternatively, with a loop tab (not shown) positioned on the underside of one of rear shoulder straps 142 or 143 behind hook tab 146 or 137 respectively, the backpiece shoulder straps can  
35 completely encircle the neck to themselves constitute a collar for supporting the backpiece on the wearer. This capability assists a person with a disability in one arm to self-dress if the two shoulder straps are joined to

form a collar before the garment is put on, and the collar then looped over the head using the good arm.

The garments and method of this invention have many advantages. Because the clothing has the appearance of conventional clothing, users with disabilities can feel less conspicuously different to others. Dressing and undressing a patient is faster and simpler than with conventional clothing and it is unnecessary for the individual to stand to put on lower body garments, or to pull clothes over the limbs. Garments in accordance with the invention facilitate a greater degree of independence and self-dressing, and this in turn heightens feelings of self-esteem whilst reducing feelings of frustration and helplessness.

The level of pain and discomfort is reduced because the degree of movement of injured limbs and joints is reduced. In instances where assistance is required for dressing or where the patient must be bathed or toileted, a wearer of the lower body garment has a greater degree of privacy and dignity due to the location of the front portion whilst these operations are carried out.

Garments in accordance with the invention provide easy access to injury sites and can be removed and changed without it being necessary to disconnect medical equipment such as intravenous lines and the like. This has the potential to reduce the incidence of infection caused in acute care situations if medical equipment must frequently be disconnected. Furthermore the garments of the present invention facilitate medical examination, injections and the like. When dressing patients in traction or fracture patients in plaster, the garments of the present invention obviate the necessity of pulling the shorts over the legs thereby providing simpler, more expeditious and potentially less painful dressing procedures.

Garments in accordance with the invention are easy to use and reduce the physical and psychological stress on both patients and carers. Because the garments are

easy and quick to use, medical consulting time can be reduced and nursing time is freed for other care duties.

The comparative ease of self-dressing in comparison with prior art garments both facilitates and encourages  
5 patients to more frequently participate in activities such as hydrotherapy and physiotherapy which usually necessitate undressing and requires assistance.

It will of course be realised that whilst the above has been given by way of an illustrative example of this  
10 invention, all such and other modifications and variations hereto, as would be apparent to persons skilled in the art, are deemed to fall within the broad scope and ambit of this invention as is herein set forth.

## Claims

1. A fastening seam assembly for releasably fastening together portions of a garment, said fastening seam assembly including:-
- 5 a first assembly member for fixing to one portion of the garment and comprising a first fastening member, and a second assembly member for fixing to another portion of the garment and comprising a second support member, a second fastening member complementarily engageable by said first fastening member and fixed to said second support member, and a shielding member covering said second fastening member.
- 10 2. A fastening seam assembly as claimed in claim 1, wherein said first and second fastening members comprise the loops and hooks respectively of a hook and loop fastener.
- 15 3. A fastening seam assembly as claimed in claim 1, wherein said first assembly member further comprises a first support member, said first fastening member being fixed thereto.
- 20 4. A fastening seam assembly as claimed in claim 1, said shielding member and said second support member defining a cleft for receiving said first assembly member therein for engagement of said first and second fastening members.
- 25 5. A fastening seam assembly as claimed in claim 4, wherein said shielding member includes padding.
- 30 6. A fastening seam assembly as claimed in claim 4, wherein said shielding member and said second support member are formed from one piece of material.
- 35 7. A garment functional in a wearing mode and a changing

mode, said garment including:-

interconnected front and rear garment portions for covering front and rear body portions of a wearer, said front and said rear garment portions having lateral edge portions;

locating means supportable by the body of a wearer for locating a portion of the garment in position on the body, and

fastening means for releasably fastening together corresponding lateral edge portions of said front and said rear garment portions;

said garment being in said wearing mode when corresponding lateral edge portions of said front and said rear garment portions are fastened by said fastening means, and in said changing mode when corresponding lateral edge portions of said front and said rear garment portions are not fastened by said fastening means.

8. A garment as defined in claim 7, wherein said garment is a lower body garment and said lateral edge portions are substantially transverse to the upper portions of said front and rear body portions which in use are located about the waist of a wearer, wherein said fastening means are hook and loop fastening strips located along said lateral edge portions, and wherein said locating means is connectable to opposed lateral edge portions of one of said front and rear garment portions and with the upper portion of the other of said front and rear garment portions constitutes a girdle.

9. A garment as claimed in claim 7, wherein said fastening means is a fastening seam assembly as claimed in claim 1, said first and second assembly members being fixed to said rear and front garment portions respectively.

10. A garment as claimed in claim 9, wherein said garment is a lower body garment and said front and rear

garment portions are interconnected by a web portion which, in use, is disposed between the wearer's legs.

11. A lower body garment as claimed in claim 10, wherein  
5 said front and rear garment portions have left and right lateral edge portions.

12. A lower body garment as claimed in claim 11, wherein  
said locating means is a belt, in use, passing about the  
10 waist of the wearer.

13. A lower body garment as claimed in claim 12, wherein  
said belt extends between said left and right lateral  
edge portions of one of said front and rear garment  
15 portions.

14. A lower body garment as claimed in claim 13, wherein  
said belt is selectively fastenable to at least one of  
said left and right lateral edge portions of said front  
20 garment portion.

15. A lower body garment including:-

front and rear garment portions interconnected by a  
web portion which, in use, is disposed between the  
25 wearer's legs, said front and rear garment portions  
extending to form leggings and having left and right  
lateral edge portions;

a fastening seam assembly in at least one of said  
leggings, said fastening seam assembly having a first  
30 assembly member fixed to a lateral edge portion of the  
rear garment portion and fastening means in the form of  
the loops of a hook and loop fastener, and a second  
assembly member having a support member fixed to a  
corresponding lateral edge portion of the front garment  
35 portion, fastening means in the form of the hooks of a  
hook and loop fastener and a shielding member covering  
said hooks, said shielding member and said support member  
defining a cleft for receiving said first assembly member

therein for engagement of said hooks and loops, and

locating means in the form of a belt releasably fastened to and extending between said left and right lateral edge portions of one of said front and rear garment portions and with the upper portion of the other of said front and rear garment portions constituting a girdle.

16. A garment as claimed in claim 7, wherein said garment is an upper body garment having sleeves and said front and rear garment portions are the front and rear sleeve portions of at least one sleeve, said sleeve portions being interconnected in the underarm location and having upper lateral edge portions.

17. An upper body garment as claimed in claim 16, wherein said locating means is a belt, in use, passing about the neck of the wearer.

18. An upper body garment as claimed in claim 17 and having a frontpiece and a backpiece, one of said frontpiece and backpiece being openable, wherein said belt extends between opposed upper portions of said sleeves and with the upper portion of the other of said frontpiece and backpiece constitutes a collar.

19. An upper body garment as claimed in claim 18, wherein said belt is selectively fastenable to at least one of said upper lateral edge portions.

20. An upper body garment as claimed in claim 16, wherein said fastening means is a fastening seam assembly having a first assembly member fixed to the upper lateral edge portion of said rear sleeve portion, said first assembly member comprising a first fastening member; and a second assembly member fixed to the upper lateral edge portion of said front sleeve portion, said second assembly member comprising a second support member and a



second fastening member complementarily engageable by said first fastening member and fixed to said second support member.

- 5 21. An upper body garment as claimed in claim 20, wherein said first assembly member further comprises a first support member, said first fastening member being fixed thereto.
- 10 22. An upper body garment including:-  
a frontpiece and a backpiece, one of said frontpiece and backpiece being openable;  
a pair of sleeves, at least one sleeve having front and rear sleeve portions interconnected in the underarm  
15 location and having upper lateral edge portions;  
a fastening seam assembly in said at least one sleeve, said fastening seam assembly having a first assembly member fixed to the upper edge portion of the rear sleeve portion and fastening means in the form of  
20 the hooks of a hook and loop fastener, and a second assembly member having a support member fixed to the upper edge portion of the front sleeve portion and fastening means in the form of the hooks of a hook and loop fastener, and  
25 locating means in the form of a belt releasably fastened to and extending between upper portions of said sleeves and with the upper portion of said backpiece constituting a collar.
- 30 23. A method of donning a garment, said method including:-  
providing a garment as claimed in claim 7;  
supporting said locating means as a girdle or collar on the body of the wearer, and  
35 releasably fastening together said corresponding lateral edge portions of said front and said rear garment portions.

24. A one piece garment including:-

front and rear trunk portions for covering portions of a wearer's trunk and front and rear limb portions for covering portions of a wearer's limbs, said garment being  
5 releasably fastenable along a lateral limb region and said front and rear limb portions being joined along a medial limb region, and

fastening means for releasably fastening together said front and rear limb portions.

10

25. A garment as claimed in claim 24, wherein said garment is a lower body garment and said front and rear limb portions are releasably fastenable to form a legging.

15

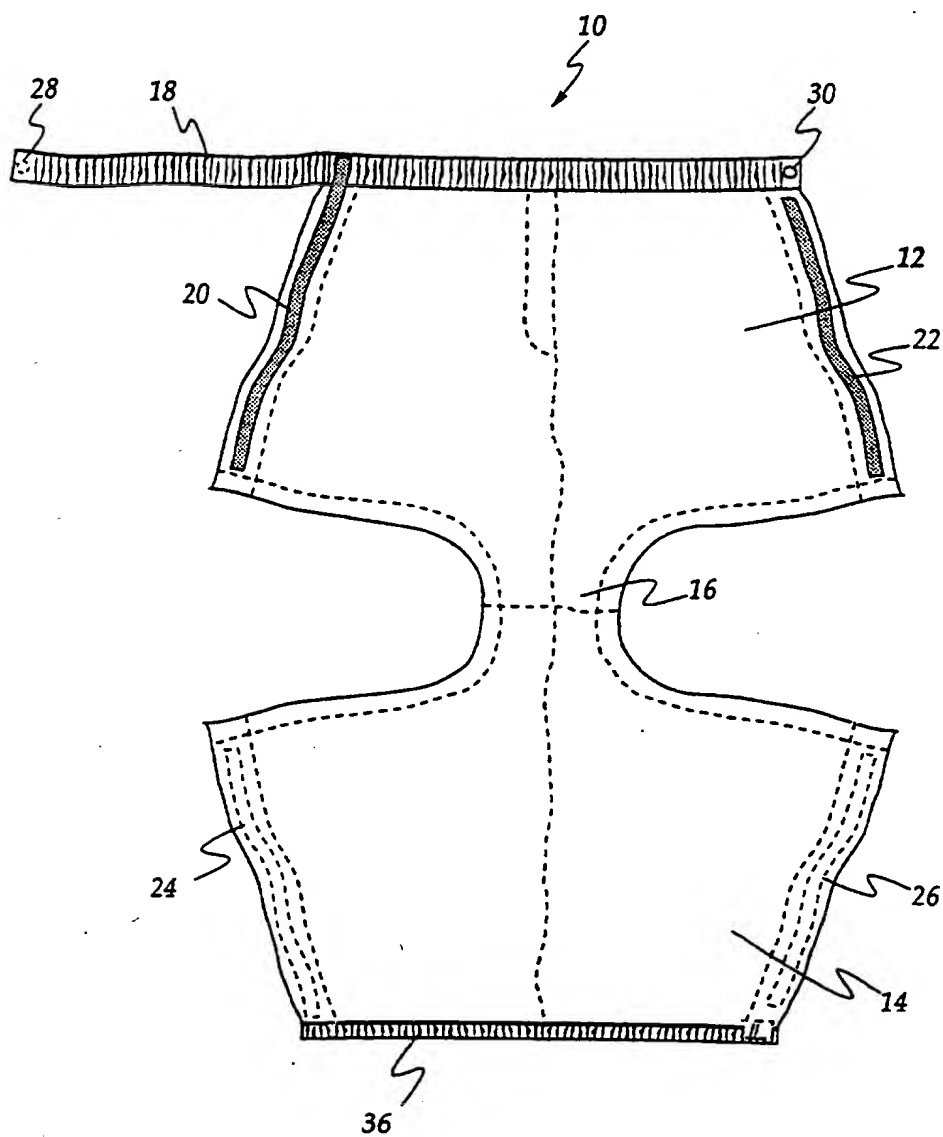
26. A lower body garment as claimed in claim 25, wherein said front and rear trunk portions are releasably fastenable along a lateral trunk region.

20 27. A garment as claimed in claim 24, wherein said garment is an upper body garment and said front and rear trunk portions are joined along a lateral trunk region.

28. An upper body garment as claimed in claim 27,  
25 wherein said upper body garment is a jacket, nightshirt or the like, said front and rear limb portions being releasably fastenable to form a sleeve.

29. An upper body garment as claimed in claim 27,  
30 wherein said upper body garment is a singlet, vest or the like, said front and rear limb portions being releasably fastenable to form a shoulder strap.

30. An upper body garment as claimed in claim 27,  
35 wherein said front trunk portion is releasably fastenable to form left and right front trunk portions.



*Fig. 1.*

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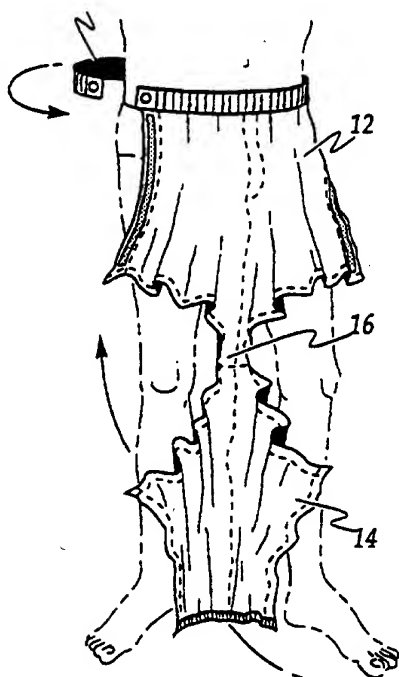


Fig. 2A.

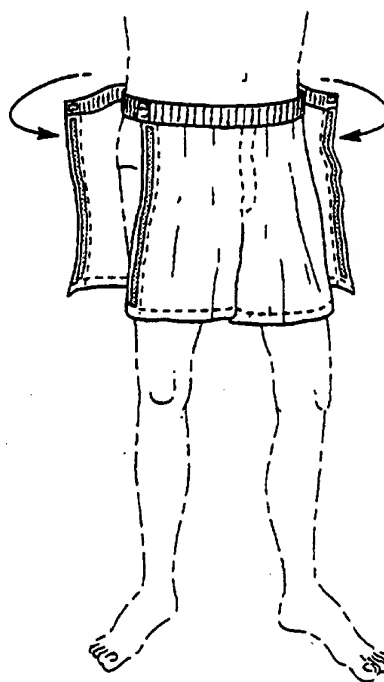


Fig. 2B.

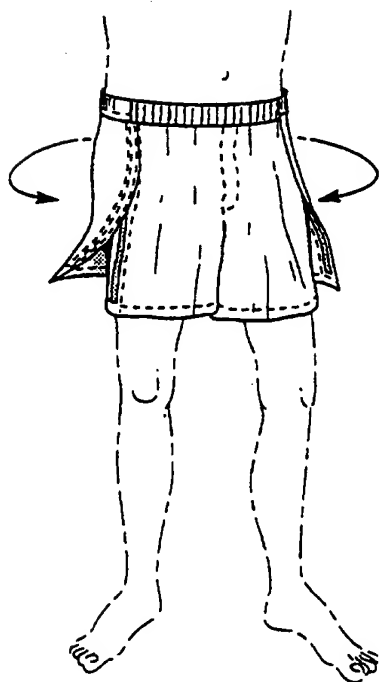


Fig. 2C.

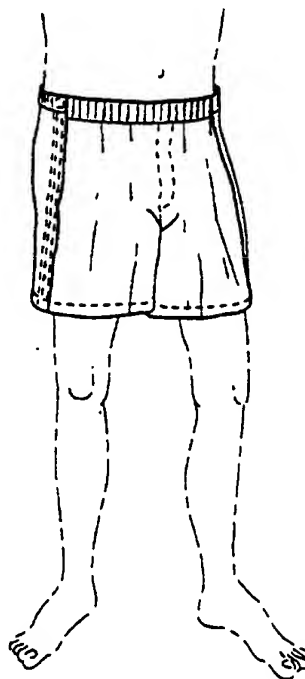
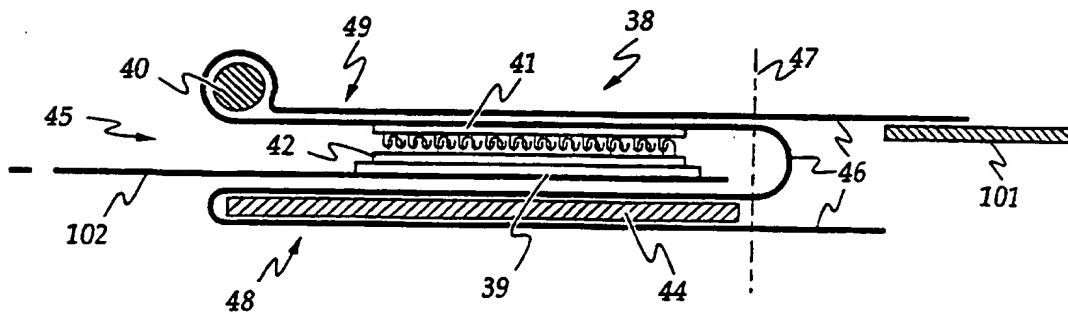
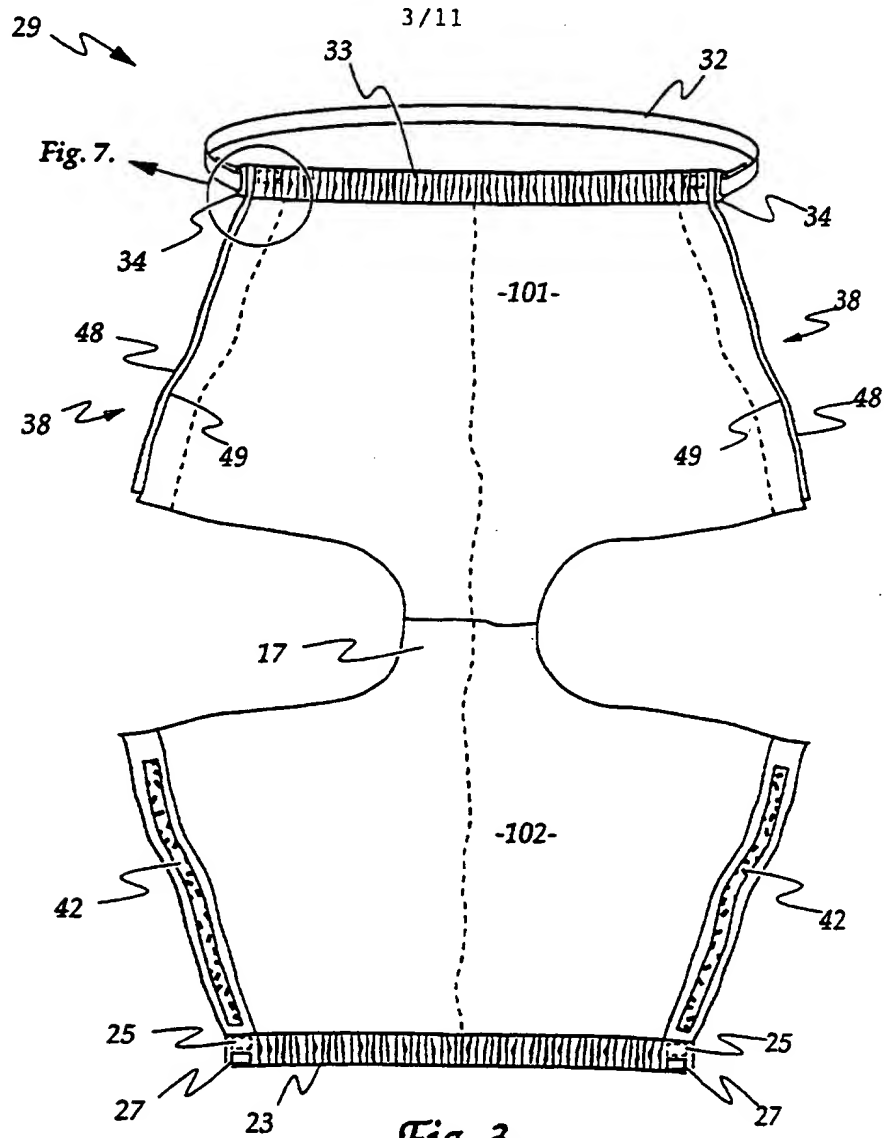


Fig. 2D.



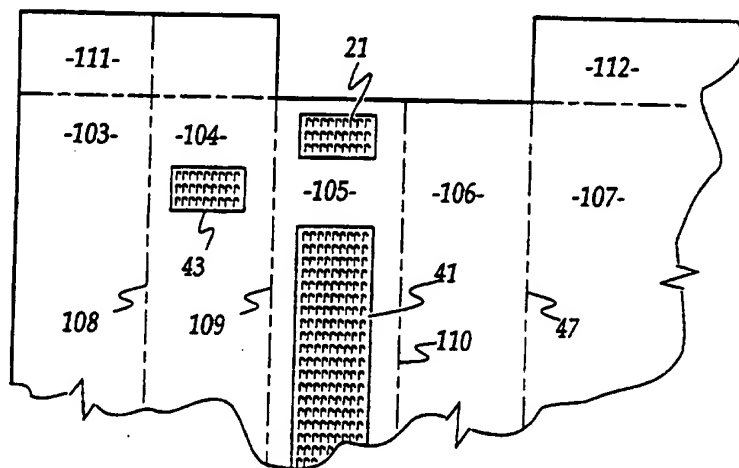


Fig. 5A.

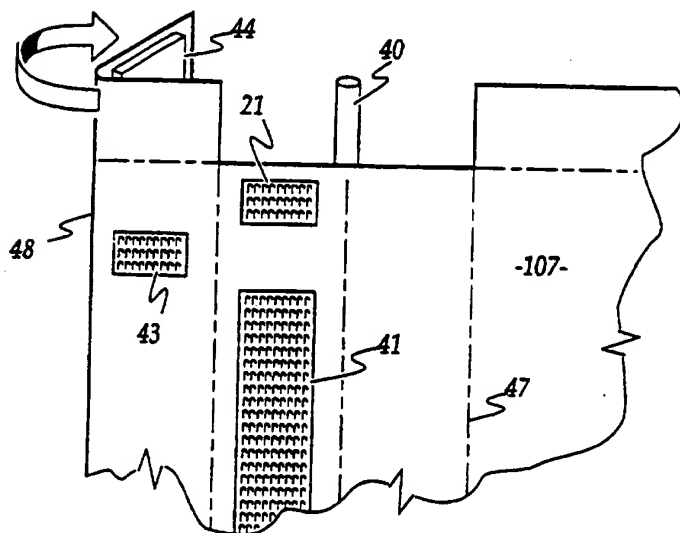
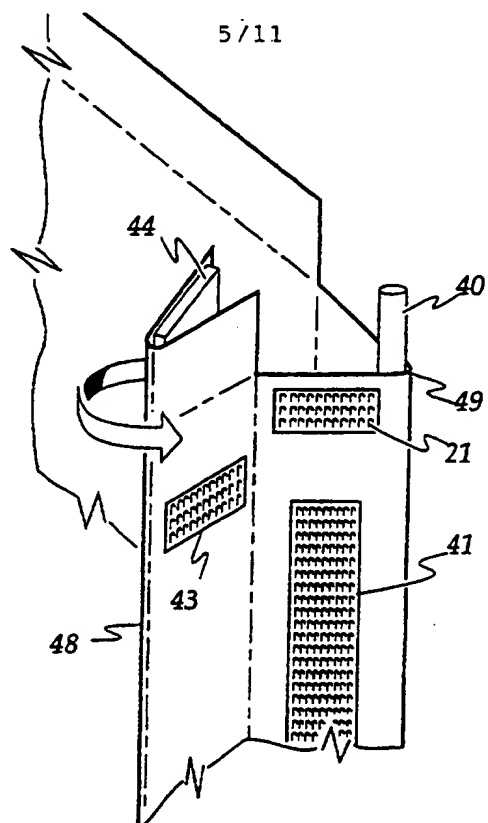
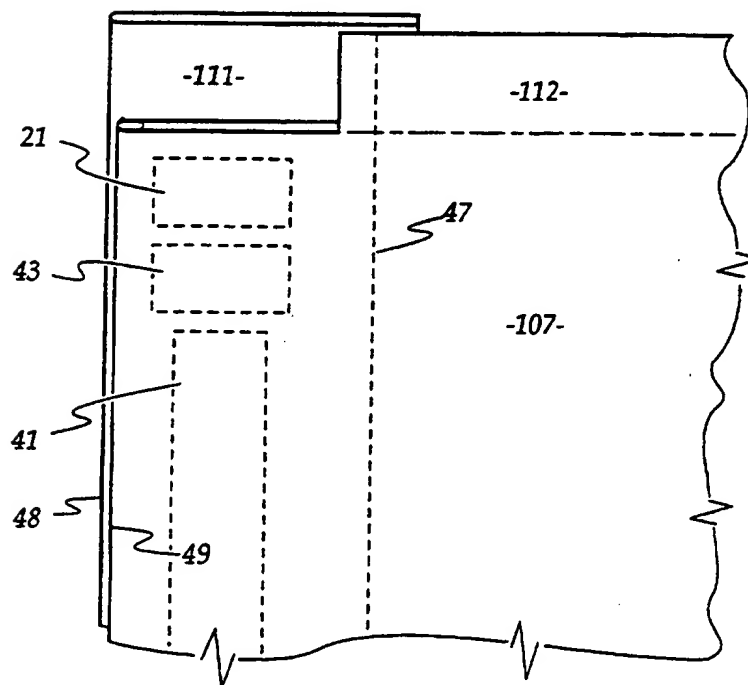


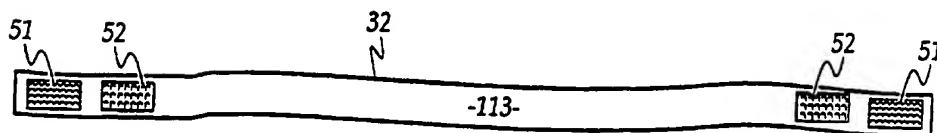
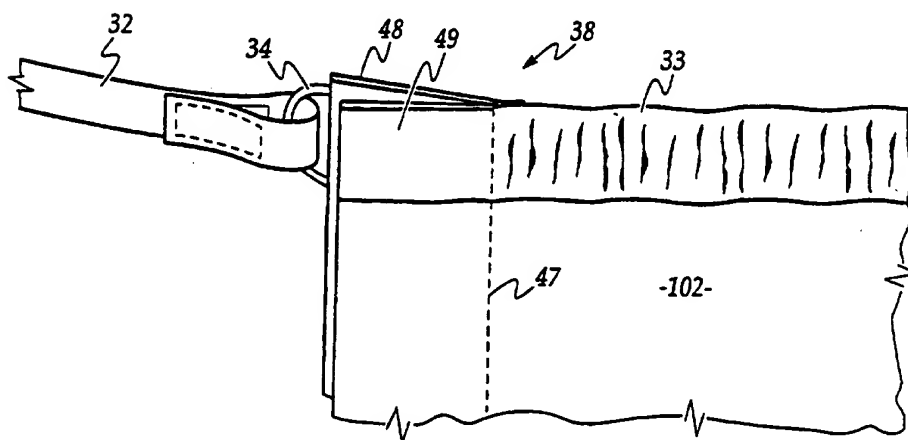
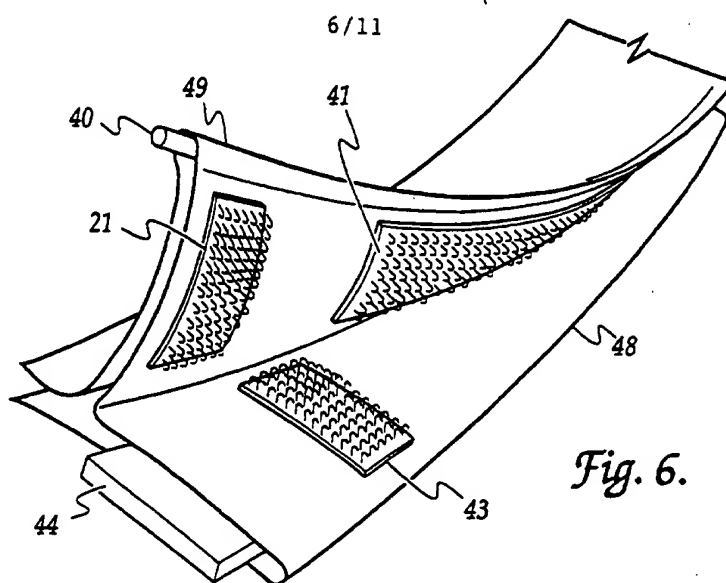
Fig. 5B.



*Fig. 5C.*

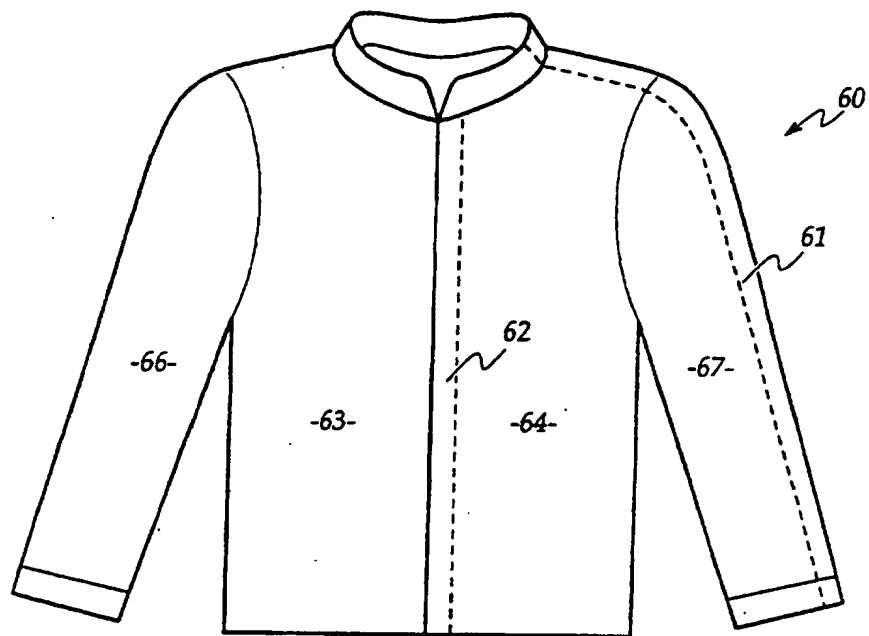


*Fig. 5D.*

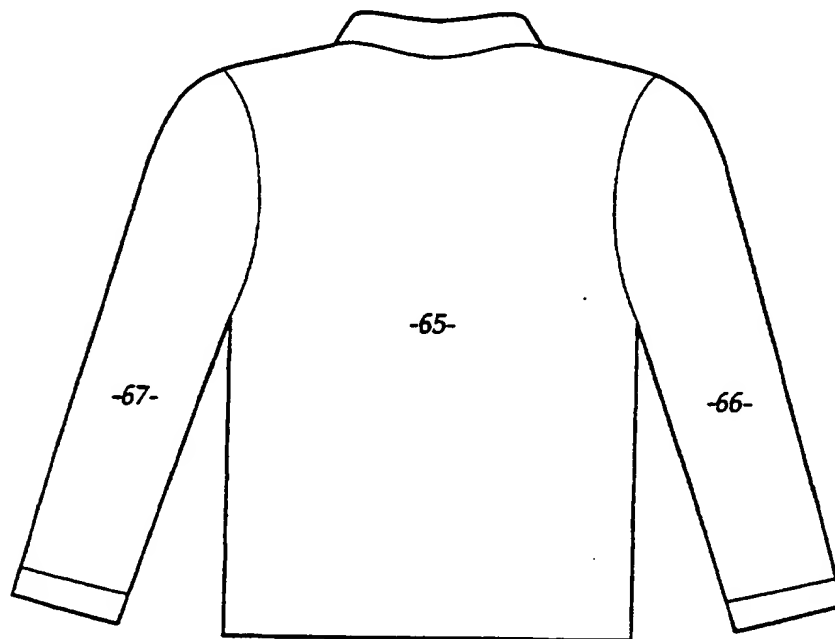




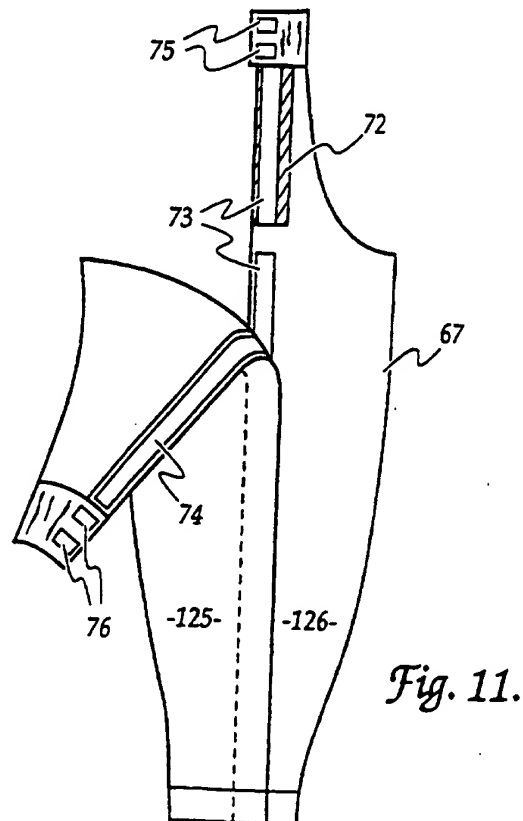
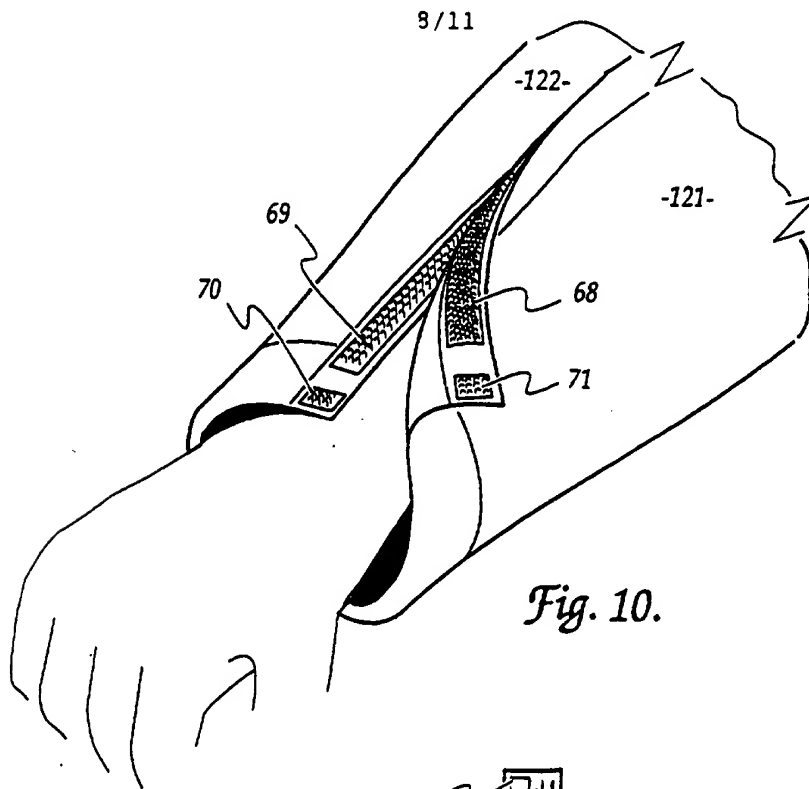
7/11



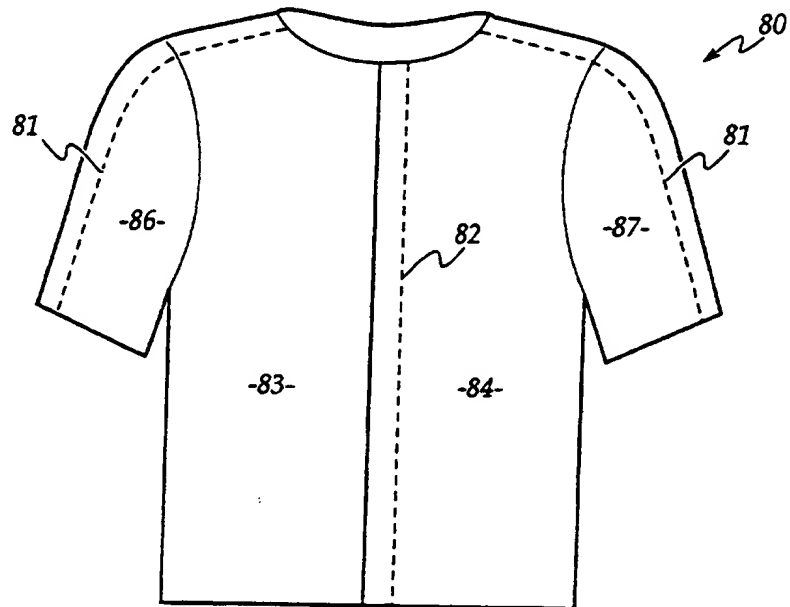
*Fig. 9A.*



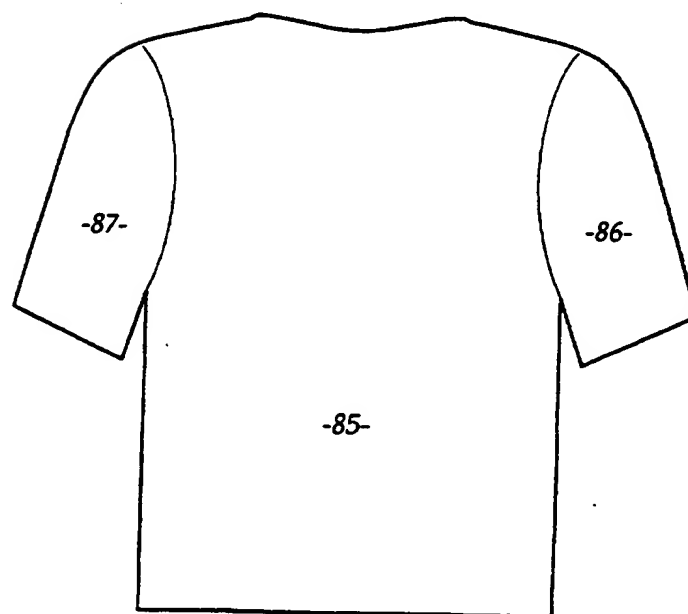
*Fig. 9B.*



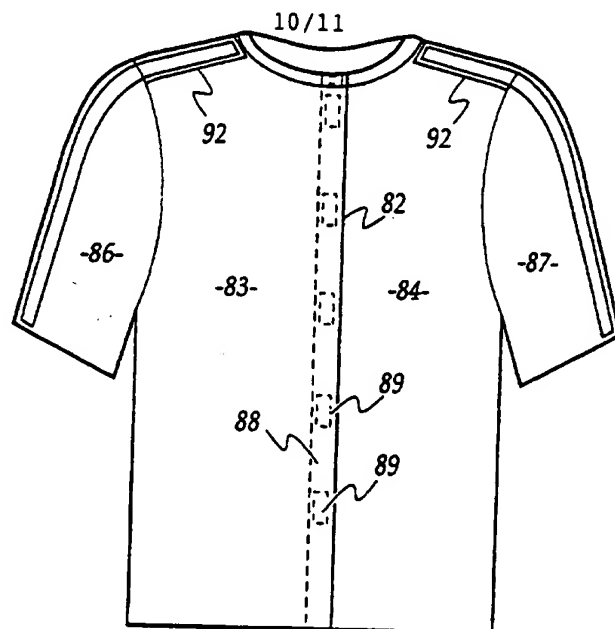
9/11



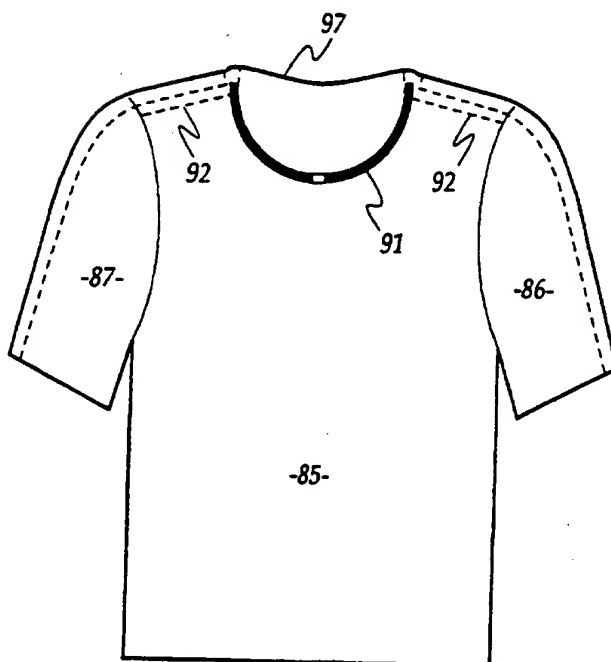
*Fig. 12A.*



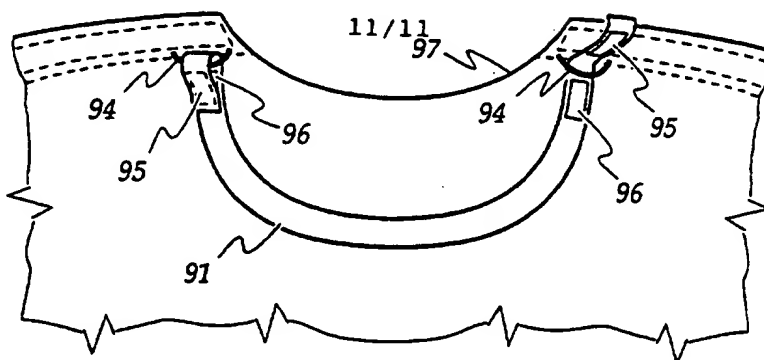
*Fig. 12B.*



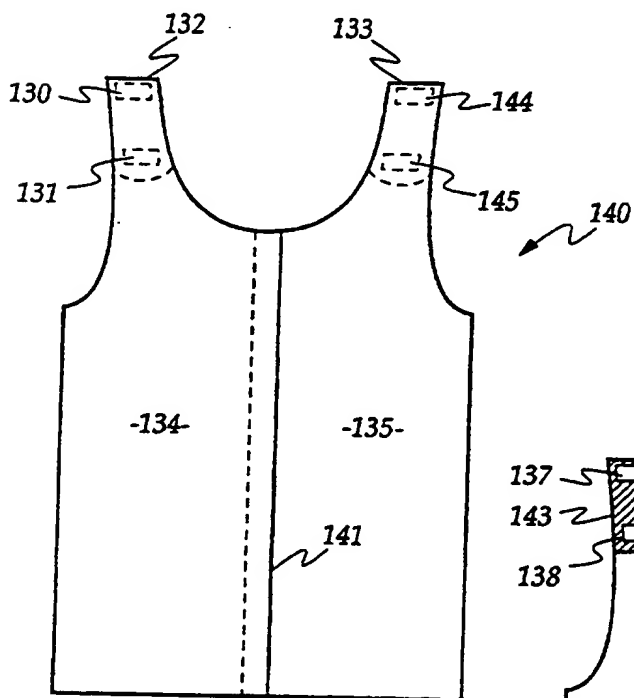
*Fig. 13A.*



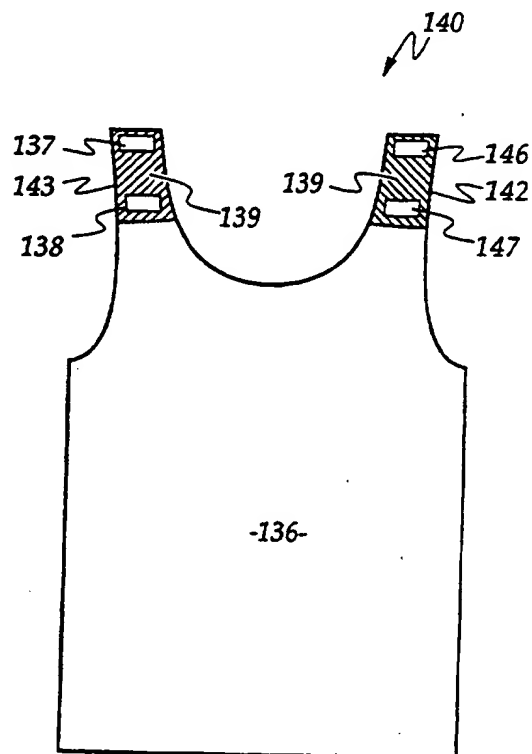
*Fig. 13B.*



*Fig. 14.*



*Fig. 15A.*



*Fig. 15B.*

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 95/00839

## A. CLASSIFICATION OF SUBJECT MATTER

Int Cl<sup>B</sup>: A41B 1/10, 9/02, 9/04, 9/14, 13/04; A41D 1/04, 1/08, 27/24; A41F 1/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC A41B 1/10, 9/02, 9/04, 9/14, 13/04; A41D 1/04, 1/08, 27/24; A41F 1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
AU: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3827085 A (ACKERMANN) 6 August 1974 figures 1, 2	1, 22
X	US 3606613 A (JOHNSON JR) 21 September 1971 figure 3	1, 22
X	US 4578828 A (SMITH SR et al.) 1 April 1986 figures 3, 4	1, 22

☒ Further documents are listed in the continuation of Box C

☒ See patent family annex

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- \*Z\* document member of the same patent family

Date of the actual completion of the international search  
4 April 1996

Date of mailing of the international search report

23RD APRIL 1996.

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## INTERNATIONAL SEARCH REPORT

national Application No.

PCT/AU 95/00839

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 1356989 A (DOLLFUS-MIEG & CIE) 19 June 1974 figure 2	1, 22
X	DE 960441 A (LENZ) 21 March 1957 figure 2	1, 22
X	DE 1435820 A (MAECKLER) 19 December 1968 figure 1	1, 22
X	DE 1435822 A (MAECKLER) 23 July 1970 figure 1	1, 22
X	AU 19451/34 (IMPERIAL CHEMICAL INDUSTRIES OF AUSTRALIA AND NEW ZEALAND LIMITED) 31 October 1935 figures 1-3	1, 22
X	US 2201662 A (LUCO) 21 May 1940 diaper A, crotch portion 12, straps 32	7, 15, 23, 24
X	GB 699143 A (WILLIAMSON) 28 October 1953 panel A, central section D	7, 15, 23, 24
X	DE 2166345 A (DUNIAU) 17 August 1973 garment 5, crotch portion 22	7, 15, 23, 24
X	US 3094990 A (NEILSON) 25 June 1963 column 2 lines 36-46 figures 1, 3	7, 15, 23, 24
X	EP 196667 A (ICHIKAWA) 8 October 1986 pages 4-5 figure 1	7, 15, 23, 24
X	FR 1137960 A (PANEM) 6 June 1957 figures 1, 3, 4	7, 15, 23, 24
X	FR 959845 A (PANIGEL) 5 April 1950 figures 1, 2	7, 15, 23, 24
X	AU 24090/84 A (MORROW) 27 September 1984 page 5 figure 3	7, 15, 23, 24
X	FR 830597 A (INTERNATIONAL LATEX PROCESSES LIMITED) 31 August 1957 figures 1, 2	7, 15, 23, 24

# INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/AU 95/00839

## C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CH 322955 A (ALMGREN) 31 August 1957 figures 1, 2	7, 15, 23, 24
X	FR 1046351 A (ETABLISSEMENTS MONDEX) 7 December 1953 figures 2, 3	7, 15, 23, 24
X	FR 1021350 A (BRUHLMANN) 17 February 1953 (and CH 281122 and DE 813831) figures 1, 2	7, 15, 23, 24
X	CH 309903 A (CAROUGE) 1 December 1955 figures 1, 2	7, 15, 23, 24
X	DE 1435886 A (ROSL) 20 March 1969 figures 1-4	7, 15, 23, 24
X	US 2431571 A (LEHR) 25 November 1947 column 2 lines 6-20 figures 1, 2	7, 15, 23, 24
X	US 2516951 A (BRINK) 1 August 1950 entire document	7, 15, 23, 24
X	US 2545761 A (BRINK) 20 March 1951 entire document	7, 15, 23, 24
X	US 2058509 A (ROSE) 27 October 1936 entire document	7, 15, 23, 24
X	AU 80371/94 (658554) B (PORTESSA PTY LTD) 13 April 1995 document having the same priority date and by the same applicant	7, 15, 23, 24
X	AU 1212/46 (129449) B (GARRISON) 27 February 1946 columns 4, 5 figures 3, 7	7, 15, 23, 24
X	US 2671220 A (GEISSMANN) 9 March 1954 jacket 10, crotch 15, fastening means 14	7, 15, 23, 24



# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 95/00839

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Claims 1 and 22 in being directed to a fastening seam assembly and garment having such an assembly are not for the same invention as claims 7, 15, 23 and 24 which are directed to a garment which is easily donned by incapacitated persons, the claims so grouped do not have one or more of the same or corresponding special technical features.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/AU 95/00839

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
US	3827085	AU	53453/73	BE	797355	CA	994953
		CH	568032	DE	2317121	ES	413386
		FR	2178896	GB	1422168	IT	981988
		JP	49008350	NL	7304417	ZA	7301768
US	4578828	GB	2166941				
GB	1356989	AT	6218/71	BE	769951	CA	987852
		DE	2134963	FR	2120212	NL	7109587
		US	3789430	ZA	7104638		
DE	2166345	GB	1380693	GB	1380694	GB	1380695
		GB	1380696	GB	1380697	US	3693503
		US	3756030	US	3782489	US	3804122
		US	4139985				
EP	196667	JP	61231201	US	4702239		
END OF ANNEX							